

Compact Optical Carbon Dioxide Monitor for EVA, Phase I

Completed Technology Project (2008 - 2008)



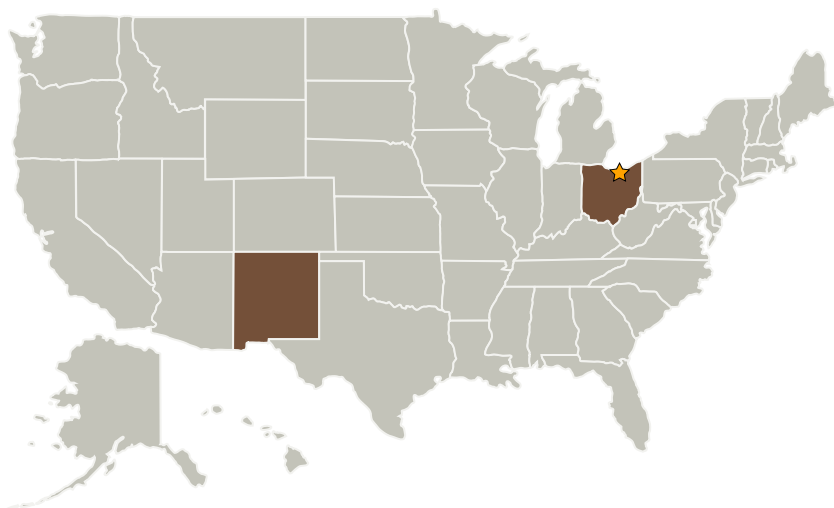
Project Introduction

Breath respiratory species measurement during extravehicular activity (EVA) or intravehicular activity (IVA) is a demanding application for optical sensing techniques. Yet optical techniques offer many advantages including high-precision, fast response, and strong species selectivity. Accommodation within spacesuits demands that optical sensors meet stringent size, weight and power requirements. Vista Photonics proposes to develop rugged, compact, low-power optical sensor technology capable of selectively determining carbon dioxide at EVA-relevant concentrations. The enabling technology for meeting stringent NASA mission requirements is a new low power infrared optical source that provides the high-sensitivity of established optical absorption detection techniques.

Anticipated Benefits

Potential NASA Commercial Applications: Phase III commercial applications abound for sensors whose performance and physical characteristics are suitable for spaceflight. Examples include contaminant monitoring in process gas streams in the chemical and microelectronics industries, medical diagnosis through detection of biogenic gases in human breath that correlate to specific pathologies, and environmental monitoring and regulatory compliance in agriculture, power production, and occupational safety. The fully-developed Phase II instruments shall offer a compelling and desirable blend of performance, affordability, compactness, simplicity and ease-of-use relative to present commercial product offerings in these applications.

Primary U.S. Work Locations and Key Partners



Compact Optical Carbon Dioxide Monitor for EVA, Phase I

Table of Contents

Project Introduction	1
Anticipated Benefits	1
Primary U.S. Work Locations and Key Partners	1
Project Transitions	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	2
Technology Areas	3

Compact Optical Carbon Dioxide Monitor for EVA, Phase I

Completed Technology Project (2008 - 2008)



Organizations Performing Work	Role	Type	Location
★ Glenn Research Center(GRC)	Lead Organization	NASA Center	Cleveland, Ohio
Vista Photonics, Inc.	Supporting Organization	Industry	Santa Fe, New Mexico

Primary U.S. Work Locations	
New Mexico	Ohio

Project Transitions

February 2008: Project Start

August 2008: Closed out

Closeout Summary: Compact Optical Carbon Dioxide Monitor for EVA, Phase I Project Image

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Glenn Research Center (GRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

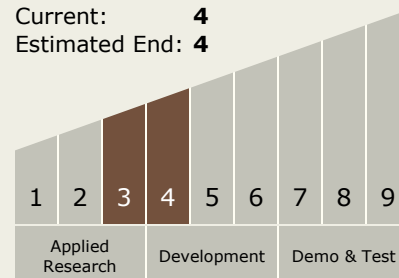
Carlos Torrez

Principal Investigator:

Jeffrey Pilgrim

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Compact Optical Carbon Dioxide Monitor for EVA, Phase I

Completed Technology Project (2008 - 2008)



Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.6 Ground Computing
 - └ TX11.6.5 Public Cloud Supercomputer